

**REMARKS**

The Official Action mailed August 16, 2005, has been received and its contents carefully noted. Filed concurrently herewith is a *Request for One Month Extension of Time*, which extends the shortened statutory period for response to December 16, 2005. Accordingly, the Applicant respectfully submits that this response is being timely filed.

The Applicant notes with appreciation the consideration of the Information Disclosure Statements filed on January 24, 2002; March 19, 2002; October 3, 2003; and February 16, 2004.

Claims 1-39 were pending in the present application prior to the above amendment. Claim 21 has been canceled, claims 1-3, 23 and 28-30 have been amended to better recite the features of the present invention. Accordingly, claims 1-20 and 22-39 are now pending in the present application, of which claims 1-3, 23 and 28-30 are independent. For the reasons set forth in detail below, all claims are believed to be in condition for allowance. Favorable reconsideration is requested.

The Official Action rejects claim 21 under 35 U.S.C. § 112, second paragraph. In response, claim 21 has been canceled without prejudice or disclaimer; therefore, the rejection is moot.

The Official Action rejects claims 1-39 as obvious based on the combination of U.S. Patent Application Publication No. 2002/0098635 to Zhang et al. and U.S. Patent No. 5,966,596 to Ohtani et al. The Applicant respectfully traverses the rejection because the Official Action has not made a *prima facie* case of obviousness.

As stated in MPEP §§ 2142-2143.01, to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. Obviousness can only be established by combining or modifying the

teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art. “The test for an implicit showing is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in the art.” In re Kotzab, 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000). See also In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); In re Jones, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

There is no suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify Zhang and Ohtani or to combine reference teachings to achieve the claimed invention. MPEP § 2142 states that the examiner bears the initial burden of factually supporting any *prima facie* conclusion of obviousness. It is respectfully submitted that the Official Action has failed to carry this burden. While the Official Action relies on various teachings of the cited prior art to disclose aspects of the claimed invention and asserts that these aspects could be used together, it is submitted that the Official Action does not adequately set forth why one of skill in the art would combine the references to achieve the features of the present invention.

The test for obviousness is not whether the references “could have been” combined or modified as asserted in the Official Action, but rather whether the references should have been. As noted in MPEP § 2143.01, “The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination.” In re Mills, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990) (emphasis in original). Thus, it is respectfully submitted that the standard set forth in the Official Action is improper to support a finding of *prima facie* obviousness.

Regarding pages 2-21 of the Official Action, please incorporate by reference the arguments presented at pages 11-16 of the *Amendment* filed June 3, 2005. In addition to the above, the Applicant respectfully submits the following additional comments to clarify the position that there is no suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify Zhang and Ohtani or to combine reference teachings to achieve the claimed invention.

Zhang is asserted to disclose crystallizing an amorphous silicon film, forming a silicon oxide film as a protective film on the crystallized silicon film and doping the crystallized silicon film with an impurity. That is, the oxide film of Zhang is formed after the crystallization step. On the other hand, Ohtani discloses forming an oxide film on a surface of an amorphous silicon film so as to improve the surface characteristics and then crystallizing the amorphous silicon film. That is, the oxide film of Ohtani is formed before the crystallization step. Since the timing of forming the oxide film of Zhang is different from that of Ohtani, it is not clear why one of ordinary skill in the art at the time of the present invention would have applied the teachings of Ohtani to Zhang. Also, the Official Action has not shown evidence from the prior art or within the level of ordinary skill at the time of the present invention as to why such a combination would have been obvious. Therefore, the Applicant respectfully submits that there is insufficient motivation to combine Zhang and Ohtani.

Specifically, in the present invention, independent claims 1, 23 and 28 recite forming a chemical oxide film on a surface of the crystallized semiconductor film comprising silicon by using a liquid chemical. That is, the oxide film of the present invention is formed after the crystallizing step. On the other hand, the oxide film of Ohtani appears to be formed before the crystallization step as mentioned above. The application of Zhang would appear to teach away from Ohtani in that an oxide film would be formed after the crystallization step.

Moreover, please note that claims 2, 3, 29 and 30 have been amended to recite terminating dangling bonds on a surface of a crystallized semiconductor film comprising silicon. The Official Action asserts that Ohtani teaches terminating dangling bonds on a surface of a semiconductor film by formation of an oxide film. However, the timing of terminating dangling bonds of the present invention is different from that of forming of the oxide film of Ohtani. That is, terminating dangling bonds of the present invention is conducted after the crystallization step, on the other hand, forming the oxide film of Ohtani is to be formed before the crystallization step. Again, there is no clear teaching in the prior art that Zhang's method of forming an oxide after the crystallization step should have been applied to Ohtani. Therefore, the Applicant respectfully submits that there is insufficient motivation to combine Zhang and Ohtani to achieve all the features of the claims of the present application.

The Applicant respectfully submits that the Official Action has not provided a proper suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify Zhang and Ohtani or to combine reference teachings to achieve the claimed invention.

In the present application, it is respectfully submitted that the prior art of record, either alone or in combination, does not expressly or impliedly suggest the claimed invention and the Official Action has not presented a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references.

For the reasons stated above, the Official Action has not formed a proper *prima facie* case of obviousness. Accordingly, reconsideration and withdrawal of the rejections under 35 U.S.C. § 103(a) are in order and respectfully requested.

The Official Action rejects claims 1, 4, 13, 16, 20, 23, 28, 31, 37, 38 and 39 as obvious based on the combination of Zhang et al. and U.S. Patent No. 6,261,936 to Wright et al.

There is no suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify Zhang and Wright or to combine reference teachings to achieve the claimed invention. MPEP § 2142 states that the examiner bears the initial burden of factually supporting any *prima facie* conclusion of obviousness. It is respectfully submitted that the Official Action has failed to carry this burden. While the Official Action relies on various teachings of the cited prior art to disclose aspects of the claimed invention and asserts that these aspects could be used together, it is submitted that the Official Action does not adequately set forth why one of skill in the art would combine the references to achieve the features of the present invention.

Zhang discloses forming a protective film 33 on a surface of polysilicon film 32 (see Figure 8C). On the other hand, Wright appears to disclose a method of forming a chemical oxide film to cover a gate electrode by using a liquid chemical. Thus, the position of Zhang's oxide film is different from that of Wright's oxide film, and the Official Action has not shown why one of ordinary skill in the art would have been motivated to apply Wright to Zhang, particularly when the positions of the oxide film are different. Therefore, it would not have been obvious to one of ordinary skill in the art at the time of the present invention to apply Wright's method, related to a gate electrode, to Zhang's chemical oxide film for a gate electrode.

For the reasons stated above, the Official Action has not formed a proper *prima facie* case of obviousness. Accordingly, reconsideration and withdrawal of the rejections under 35 U.S.C. § 103(a) are in order and respectfully requested.

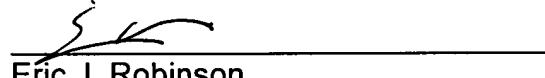
The Official Action rejects claims 7, 10, 19, 21, 24, 27 and 34 as obvious based on the combination of Zhang, Wright and Ohtani. Ohtani does not cure the deficiencies in the alleged motivation to combine Zhang and Wright. The Official Action relies on Ohtani to allegedly teach a catalytic element of Ni for accelerating crystallization and a heat treatment (page 25, Paper No. 20050811). Ohtani does not show that it would have been obvious to one of ordinary skill in the art at the time of the present invention

to apply Wright's method, related to a gate electrode, to Zhang's chemical oxide film for a gate electrode.

For the reasons stated above, the Official Action has not formed a proper *prima facie* case of obviousness. Accordingly, reconsideration and withdrawal of the rejections under 35 U.S.C. § 103(a) are in order and respectfully requested.

Should the Examiner believe that anything further would be desirable to place this application in better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,



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